Report By:

National TAB
1329 E Kemper Rd, Ste 4210
Cincinnati, OH 45246

Report: **Test and Balance**
Date: **6/5/2018**

PROJECT

FREDDY'S - 135TH STREET OP, KS (FULL BALANCE) [OPEN STORE]

7301 W 135TH ST
OVERLAND PARK, KS 66223

Client

Freddy's Frozen Custard & Steakburgers
260 N Rock Rd
Suite 200
Wichita, KS 67206

National TAB

Project: FREDDY'S - 135TH STREET OP, KS (FULL BALANCE) [OPEN STORE]

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Kitchen Hood Type I	28

Deficiency List

Assigned Organization: National TAB

Status: Not Submitted

Asset:

PRIORITY (HIGH/LOW/INFO ONLY)	
HIGH	RTU-3 (Kitchen) is 45% of design (1364 CFM out of design of 3000 CFM). Significant build up of grime noted on the blower. First step is to have a mechanical clean the blower fan (NTAB is coordinating). Then National TAB will re-measure airflow. The next step would be, if target airflow is not meet by the cleaning, adding an additional return diffuser to the return duct to increase airflow. There are only (2) 12" flex duct returns with sharp transition out of bottom of unit which is causing restriction.
LOW	RTU-3 Barometric relieft is not installed properly and is introducing outside air. Sheet metal will be installed over opening at time of next Renew.
LOW (Operations to monitor)	RTU- 1 & 2 (Dining) creates drafting in the space due the distance between the dining tables and the diffusers. The ceiling is lower than the typical Freddy's. Spoke to manager and if customer complaints arise we recommend installing side wall diffusers on to the main duct relieve this drafting. Adding these diffusers will lower the airflow at the rround diffusers that is causing the drafting in the dining area.
Info Only	Final Filters on RTUs are dirty. They will be replaced during a Renew Visit.
Info Only	RTU-2 (Dining) Outside air filter was clogged. It was later cleaned in the Renew program.
Info Only	RTU-2 (Dining) is 89% of design. It is slightly low on airflow. With a clean evaporator coil will bring the airflow in design. It will take a few cleanings to get to this point.
Info Only	RTU 2 & 3 evaporator coil were found dirty and later cleaned in the Renew program.
Info Only	MAU filters are damaged, and one is missing. The Renew program will order and replace filters.
Info Only	KEF-1 (Fryer) is at 85% design airflow. This is not impacting hood performance, so no further action is required.

Notes/Comments:

Project Summary

Preface
The summary below provides a quick understanding of how well your HVAC systems balanced in respect to the design criteria. The summary concludes with a quick understanding of your building environment and possible suggestions for each of your systems after testing has been performed. Our focus is to work with the trades to remedy any issues or deficiencies during the actual field balancing and not after the balancing has occurred. Our focus is to achieve a positive environment and outcome. The level of success is determined by the availability of the trades, possible parts needed, or time constraints. Also, enclosed are pictures of building assets and items listed below that will provide your team with more insight
Facility Identification and TAB Requirements
Freddy's is located at 3390 Wedgewood Ln., Overland Park, KS. The mechanical equipment to be tested, adjusted, and balanced includes: (3) Roof Top Units (RTU), (4) Exhaust Fans (EF), (2) Kitchen Hoods, and all associated air devices.
Constant Volume RTUs with Lay-In Ceiling Diffusers
Each of the RTUs were measured at their terminal devices utilizing a flow hood. The sum of these readings is equal to the total flow for that particular unit. The total flow of each RTU was then adjusted to +/-10% of the specified design. Each terminal diffuser was balanced to within +/-10% of the engineer's design volume utilizing the provided hand damper located at the takeoff of the main & branch trunk line(s). Except for RTU 2 and 3. See deficiency list.
Kitchen Exhaust Hood & Associated Fans
Each kitchen exhaust fan was measured at the hood filter bay utilizing a velocity matrix and a manufacturer's correction factor. Each filter velocity is multiplied by the manufacturer's corrected area. The sum of these readings equals the total flow of the exhaust fans. The total flow of the exhaust was then adjusted to +/-10% of the engineers design flow. Except for KEF-1 (Fryer) is at 85%. However, it is not impacting hood performance. No additional steps required.
General Exhaust Fans
EF1 and EF2 were measured by reading each air device with a flow hood. The total airflow for each fan is equivalent to the sum of these readings. Fan speed could not be adjusted without speed controllers to get within +/-10% of design.
Final Building Tests
After completing the test and balance, the final building pressure was recorded at -0.0123W.C. average. This pressure falls within the recommended tolerances by the International Mechanical Code of +0.02"W.C. to -0.02"W.C. The building is designed for a net positive pressure and this measurement coincides with that requirement.
The hood capture was tested at the perimeter of the hood and the cook top level with the equipment heat on and 100% capture was observed.

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AIR BALANCE SCHEDULE

UNIT	AREA SERVED	HVAC SUPPLY		HVAC RETURN		HVAC OUTDOOR		OA %		HOOD MAKE-UP		HOOD EXHAUST		GENERAL EXH.	
		DESIGN	ACTUAL	DESIGN	ACTUAL	DESIGN	ACTUAL	DESIGN	ACTUAL	DESIGN	ACTUAL	DESIGN	ACTUAL	DESIGN	ACTUAL
RTU-1	DINING	3000	2954	2500	2249	500	705	16.7%	23.9%						
RTU-2	DINING	3000	2648	2500	2141	500	507	16.7%	19.1%						
RTU-3	KITCHEN	3000	1364	2500	1242	500	122	16.7%	8.9%						
MUA-1	HOOD 1A, 1B, 2									2340	1845				
KEF-1.1	FRYER											1083	923		
KEF-1.2	GRIDDLE											2200	2403		
EF-1	RESTROOM													150	161
EF-2	RESTROOM													150	164
TOTALS		9000	6966	7500	5632	1500	1334			2340	1845	3283	3326	300	325

NET BUILDING AIRFLOW CALCULATION

TOTALS	DESIGN	ACTUAL
TOTAL OA	3840	3179
TOTAL EXHAUST	3583	3651
NET AIRFLOW	257	-472

DOOR TESTED	BUILDING PRESSURE MEASUREMENTS (IN. H20)
FRONT	-0.008
SIDE	-0.016
REAR	-0.013
AVERAGE	**-0.0123**

FINAL CHECKS

ACTUAL NET AIRFLOW COINCIDES WITH DESIGN: ✗

MEASURED PRESSURES COINCIDES WITH ACTUAL NET AIRFLOW: ✓

PRESSURE FALLS WITHIN IMC TOLERANCE OF +/-0.02" W.C. ✓

NOTES:

STORE ROOFTOP

STORE

KEF-1

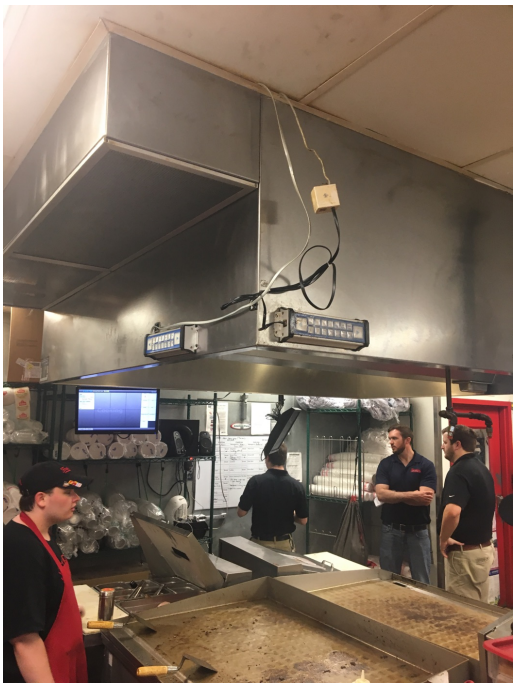
KEF-1,2 HOUSING

KEF-2

MAU-1 FILTER

MAU-1

HD-2



EF-1,2

HD-1

RTU-2

RTU-2 OA FILTER

RTU-3

RTU-2,3 COIL

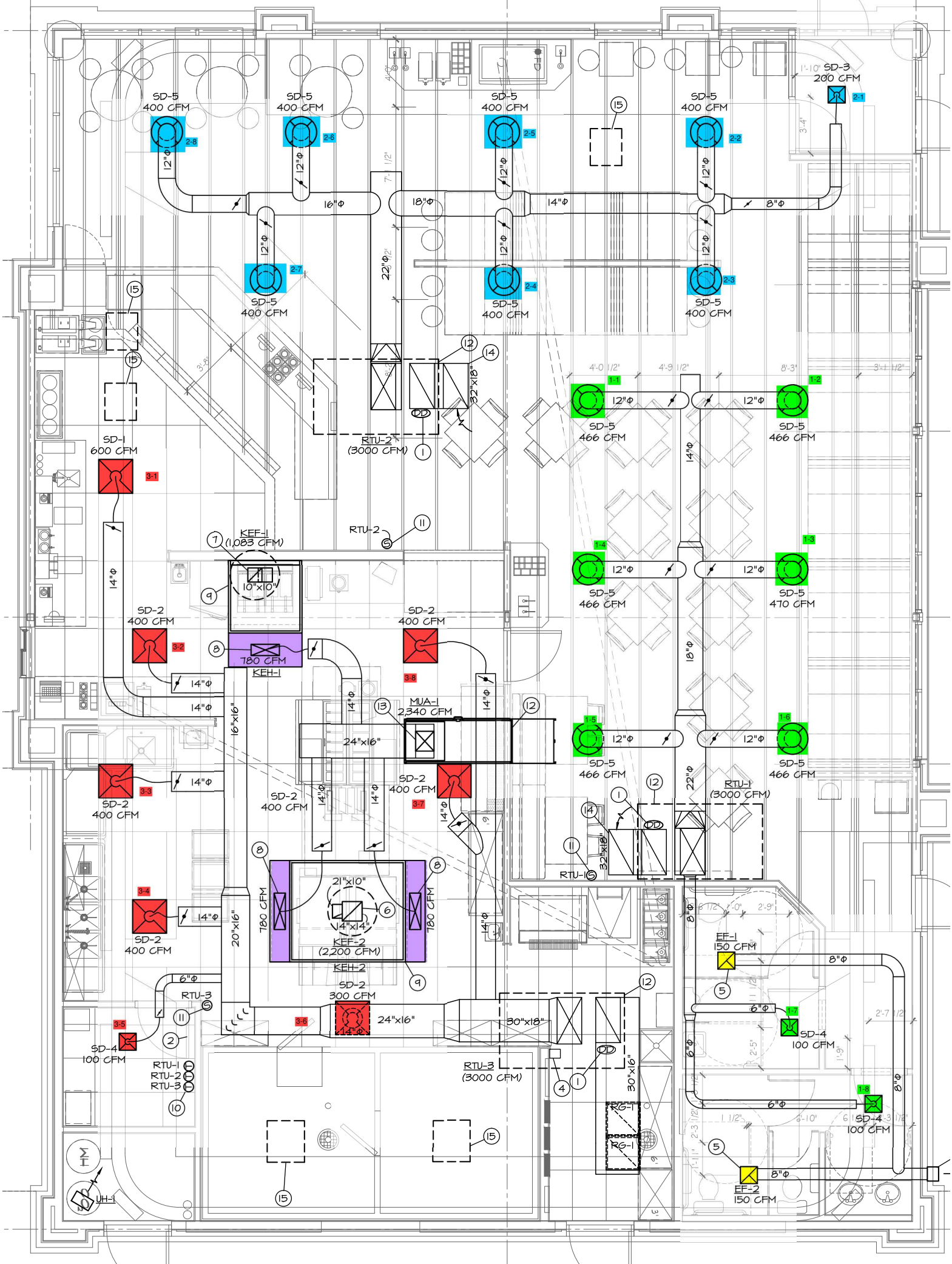
MAU FAN

RTU-1

RTU-1,3 MIXED AIR

RTU-3 FAN

RTU-3 RETURN


SD-5
400 CFM
SD-3
200 CFM
SD-5
466 CFM
SD-5
470 CFM
SD-1
600 CFM
SD-2
400 CFM
SD-2
300 CFM
SD-4
100 CFM
RTU-2
(3000 CFM)
RTU-1
(3000 CFM)
RTU-3
(3000 CFM)
KEF-1
(1,083 CFM)
KEF-2
(2,200 CFM)
KEH-1
780 CFM
KEH-2
MUA-1
2,340 CFM
EF-1
150 CFM
EF-2
150 CFM
RG-1
UH-1
10"x10"
21"x10"
14"x14"
24"x16"
30"x18"
32"x18"
22"Φ
16"Φ
18"Φ
14"Φ
12"Φ
8"Φ
6"Φ
16"x16"
20"x16"
30"x16"

TECH - STEP 1 INITIAL SITE WALKTHROUGH

Assigned Organization: National TAB

Status: Not Submitted

Asset:

INITIAL SITE WALKTHROUGH	
All diffusers and grilles are installed and match design?	No
All hood filters installed and accounted for?	Yes
Hoods are wired and have power?	Yes
Hood is free of alarms?	Yes
Thermostats have power?	Yes
Have trades/general contractor been notified about any issues and are they created on FaciliBuild?	NA

Notes/Comments:

CD-3 HAS BEEN MOVED NEXTED TO CD-2

TECH - STEP 2 UNIT DATA AND EVAL

Assigned Organization: National TAB

Status: Not Submitted

Asset:

UNIT DATA AND EVALUATION WHILE GATHERING UNIT DATA CHECK THE FOLLOWING:	
RTU's/AHU's	
Economizers are assembled and functional?	Yes
DCV Max damper opening position is set to minimum?	Yes
Free cooling enthalpy set point set for lowest setting (Typically "D")	Yes
Motors are all operating below the FLA rating?	Yes
Are belts tight?	Yes
If direct drive unit is the speed controller working.	NA
Is gas piping installed and valves turned on?	Yes
Unit free of noticeable noise and vibration	No
EF's	
Rotation is correct?	Yes
Belts are tight?	Yes
Grease cup installed on hood fan?	Yes
Hinge kit installed installed on hood fan?	Yes
Lean fan back. Is grease duct installation adequate and is duct ran all the way to the base of the fan?	Yes
Flex conduit is long enough so that fan can be completely tilted back?	Yes
There is no major leakage around base of fan?	Yes
Is the motor operating below the motor FLA rating?	Yes
For restroom fan(s) is the back draft damper installed and can it fully open?	Yes
Unit free of noticeable noise and vibration?	Yes
MUA	
Rotation is correct?	Yes

Gas piping is installed and valves are in on position?	Yes
Heater tested and is functional?	Yes
Internal motorized damper is fully opening?	Yes
Motor is operating below the FLA rating?	Yes
Unit free of noticeable noise and vibration?	Yes
HOODS	
Kitchen equipment installed in proper places?	Yes
Can kitchen equipment be turned on for final smoke test?	Yes
DOCUMENTATION	
Have trades/general contractor been notified about any issues and are they created on FaciliBuild?	NA

Notes/Comments:

RTU-3 FAN IS MAKING NOISE AND IT COULD BE THE BEARINGS ON THE FAN.

TECH - STEP 3 TEST
ADJUST AND BALANCE

Assigned Organization: National TAB

Status: Not Submitted

Asset:

TEST, ADJUST, AND BALANCE ALL EQUIPMENT:	
DURING TESTING MAKE NOTE OF THE FOLLOWING:	
Is space free of drafting?	No
Is space comfortable in all areas?	No
Is the space free of ventilation noise?	Yes
If deviations from design were necessary to resolve 1-3 what were they? Otherwise put "NA".	NA

Notes/Comments:

DINING DIFFUSERS HAVE TOO MUCH AIR FLOW AND IS CREATING UNCOMFORTABLE AREAS.

TECH - STEP 4 FINAL TESTS

Assigned Organization: National TAB

Status: Not Submitted

Asset:

FINAL TESTS	
HOOD CAPTURE TEST	
List equipment turned on for testing	ALL EQUIPMENT
List smoke candle type used	Observed during cooking
Smoke test capture - Perimeter of hood	100%
Smoke test capture - Top of cooking surface	100%
WITNESS	
Date test was completed	5/9/2018
TAB tech name / Firm	AUGUST RUTTEN
Site super name / Firm	NA
Owner representative name / Firm (if Applicable)	NA
Building pressure at front & back doors (All Systems On)	Front: -0.008", Side: -0.016, and Back: -0.013"
ADDITIONAL	
Do actual net building airflow, design net building airflow, and pressure coincide? If not why? (All three should either be positive or negative)	Yes
Thermostats are programmed?	Yes

Notes/Comments:

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Project: FREDDY'S - 135TH STREET OP, KS (FULL BALANCE) [OPEN STORE]

System/Unit: AHU/RTU

Asset: RTU1 AREA: DINING

Unit Data		
	Design	**Actual**
MFG	TRANE	TRANE
Model Num	YSC092E	YSC092E
Serial Num	-	102410080L
Type	RTU	RTU
Configuration	VERTICAL DISCHARGE	VERTICAL DISCHARGE
Num OA Filters 1	-	1
OA Filter Size 1	-	40X15
Num Final Filter 1	-	4
Final Filter Size 1	-	20X25X2
Num Final Filter 2	-	NA
Final Filter Size 2	-	NA

Motor Data		
	Design	**Actual**
Motor MFG	-	MARATHON
Frame	-	56
Horsepower	-	1
Motor Rpm	-	1725
Phase	3	3
Rated Voltage	208	208
Rated Amperage	-	3.6-3.5

Drive Data		
	Design	**Actual**
Motor Sheave Size	-	3.25
Motor Bore Size	-	1
Motor Sheave SetPt	-	2 TURNS OUT
Fan Sheave Size	-	5.75
Fan Sheave Bore	-	1
Belt CL Distance	-	11
Num of Belts	-	1
Belt Size	-	AX35
Belt Alignment	-	GOOD

Test Data		
	Design	**Actual**
SF CFM	3000	2954
SF RPM	-	777
RA CFM	2500	2249
OA CFM	500	705
RL Voltage	-	200/200/199
RL Amperage	-	2.4/2.1/2.0
SF Rotation	-	CW
RA Damper Position	-	OPEN
Min OA Damper Position	-	1.0
Min OA Damper Type	-	ECONOMIZER
Brake Horse Power	-	0.60

Performance Data		
	Design	**Actual**
MA Plenum SP	-	-0.28
Fan Suction SP	-	-0.51
Fan Discharge SP	-	0.29
Total ESP	1.00"	0.57
Fan Total SP	-	0.80

General		
	Design	**Actual**
Fan Rotation Correct	-	YES
Unit Filters Clean	-	NO
Condensate Drain Installed	-	YES

Completed By: Gus Rutten on 05/09/2018

Notes: [1] SECOND OA DAMPER 13X11 (150 CFM)
[2] OA IS SET TO 25% AS PER REQUEST
[3] AIR FLOW TESTING WAS DONE WITHOUT FINAL FILTES

Diffuser Supply (GRD)

RTU1 / DINING

Asset	Area Served	Type	Size	DESIGN CFM	AK	CFM(1)	CFM(2)	FINAL CFM	% to design
SGRD1	DINING	SD5	12"	466	1.06	304	498	415	89.1
SGRD2	DINING	SD5	12"	466	1.06	388	474	442	94.8
SGRD3	DINING	SD5	12"	466	1.06	258	547	492	105.6
SGRD4	DINING	SD5	12"	466	1.06	537	500	487	104.5
SGRD5	DINING	SD5	12"	466	1.06	190	384	460	98.7
SGRD6	DINING	SD5	12"	466	1.06	257	409	463	99.4
SGRD7	RESTROOM	SD4	6"	100	1.00	175	124	102	102.0
SGRD8	RESTROOM	SD4	6"	100	1.00	153	146	93	93.0

Completed By: Gus Rutten on 05/09/2018

Asset	Area Served	Notes

National TAB

Project: FREDDY'S - 135TH STREET OP, KS (FULL BALANCE)
[OPEN STORE]

System/Unit: AHU/RTU

Asset: RTU2 AREA: DINING

Unit Data		
	Design	**Actual**
MFG	TRANE	TRANE
Model Num	YSC092E	YSC092E
Serial Num	-	102410069L
Type	RTU	RTU
Configuration	VERTICAL DISCHARGE	VERTICAL DISCHARGE
Num OA Filters 1	-	1
OA Filter Size 1	-	40X15
Num Final Filter 1	-	4
Final Filter Size 1	-	20X25X2
Num Final Filter 2	-	NA
Final Filter Size 2	-	NA

Motor Data		
	Design	**Actual**
Motor MFG	-	MARATHON
Frame	-	56
Horsepower	-	1
Motor Rpm	-	1725
Phase	3	3
Rated Voltage	208	208
Rated Amperage	-	3.6-3.5

Drive Data		
	Design	**Actual**
Motor Sheave Size	-	3.5
Motor Bore Size	-	1
Motor Sheave SetPt	-	0.5 TURNS OUT
Fan Sheave Size	-	5.75
Fan Sheave Bore	-	1
Belt CL Distance	-	11.5
Num of Belts	-	1
Belt Size	-	AX35
Belt Alignment	-	GOOD

Test Data		
	Design	**Actual**
SF CFM	3000	2648
SF RPM	-	864
RA CFM	2500	2141
OA CFM	500	507
RL Voltage	-	204/200/200
RL Amperage	-	3.3/3.0/3.1
SF Rotation	-	CW
RA Damper Position	-	OPEN
Min OA Damper Position	-	1.75
Min OA Damper Type	-	ECONOMIZER
Brake Horse Power	-	0.87

Performance Data		
	Design	**Actual**
MA Plenum SP	-	-0.21
Fan Suction SP	-	0.43
Fan Discharge SP	-	0.43
Total ESP	1.00"	0.64
Fan Total SP	-	0.87

General		
	Design	**Actual**
Fan Rotation Correct	-	YES
Unit Filters Clean	-	NO
Condensate Drain Installed	-	YES

Completed By: Gus Rutten on 05/09/2018

Notes: [1] OA IS SET TO 25% AS PER REQUEST.
[2] OA FILTER IS DIRTY AND IS RESTRICTING OUTSIDE AIR.
[3] AIR FLOW TESTING WAS DONE WITHOUT FINAL FILTES

Diffuser Supply (GRD)

RTU2 / DINING

Asset	Area Served	Type	Size	DESIGN CFM	AK	CFM(1)	CFM(2)	FINAL CFM	% to design
SGRD1	ENTRY	SD3	8"	200	1	229	229	160	80.0
SGRD2	DINING	SD5	12"	400	1.06	80	335	378	94.5
SGRD3	DINING	SD5	12"	400	1.06	200	255	318	79.5
SGRD4	DINING	SD5	12"	400	1.06	338	262	313	78.3
SGRD5	DINING	SD5	12"	400	1.06	82	293	320	80.0
SGRD6	DINING	SD5	12"	400	1.06	383	265	355	88.8
SGRD7	DINING	SD5	12"	400	1.06	510	226	443	110.8
SGRD8	DINING	SD5	12"	400	1.06	368	475	361	90.3

Completed By: Gus Rutten on 05/09/2018

Asset	Area Served	Notes

National TAB

Project: FREDDY'S - 135TH STREET OP, KS (FULL BALANCE)
[OPEN STORE]

System/Unit: AHU/RTU

Asset: RTU3 AREA: KITCHEN

Unit Data		
	Design	**Actual**
MFG	TRANE	TRANE
Model Num	YSC092E	YSC092E
Serial Num	-	102410057L
Type	RTU	RTU
Configuration	VERTICAL DISCHARGE	VERTICAL DISCHARGE
Num OA Filters 1	-	1
OA Filter Size 1	-	40X15
Num Final Filter 1	-	4
Final Filter Size 1	-	20X25X2
Num Final Filter 2	-	NA
Final Filter Size 2	-	NA

Motor Data		
	Design	**Actual**
Motor MFG	-	MARATHON
Frame	-	56
Horsepower	-	1
Motor Rpm	-	1725
Phase	3	3
Rated Voltage	208	208
Rated Amperage	-	3.6-3.5

Drive Data		
	Design	**Actual**
Motor Sheave Size	-	3.25
Motor Bore Size	-	1
Motor Sheave SetPt	-	2 TURNS OUT
Fan Sheave Size	-	5.75
Fan Sheave Bore	-	1
Belt CL Distance	-	12.5
Num of Belts	-	1
Belt Size	-	AX36
Belt Alignment	-	GOOD

Test Data		
	Design	**Actual**
SF CFM	3000	1364
SF RPM	-	650
RA CFM	2500	1242
OA CFM	500	122
RL Voltage	-	195/195/193
RL Amperage	-	1.7/1.4/1.3
SF Rotation	-	CW
RA Damper Position	-	OPEN
Min OA Damper Position	-	CLOSED
Min OA Damper Type	-	ECONOMIZER
Brake Horse Power	-	0.41

Performance Data		
	Design	**Actual**
MA Plenum SP	-	-0.29
Fan Suction SP	-	-0.66
Fan Discharge SP	-	0.09
Total ESP	1.00"	0.38
Fan Total SP	-	0.75

General		
	Design	**Actual**
Fan Rotation Correct	-	YES
Unit Filters Clean	-	NO
Condensate Drain Installed	-	YES

Completed By: Gus Rutten on 05/09/2018

Notes: [1] SECOND OA DAMPER 13X11 (122 CFM)
[2] THE RETURN DUCTING IS NOT OF SAFFICIENT SIZE WHICH AFFACTS THE AIR FLOW TO THE RTU AND BUILDING.
[3] AIR FLOW TESTING WAS DONE WITHOUT FINAL FILTERS
[4] CD-6 WAS NOT INSTALLED
[5] OA IS SET TO (25%) AS PER REQUEST.
[6] OA ECONOMIZER NOT FUNCTIONAL

Diffuser Supply (GRD)

RTU3 / KITCHEN

Asset	Area Served	Type	Size	DESIGN CFM	AK	CFM(1)	CFM(2)	FINAL CFM	% to design
SGRD1	ORDERING	SD1	14"	600	1	168	151	151	25.2
SGRD2	PREP	SD2	14"	400	1	199	207	207	51.8
SGRD3	PREP	SD2	14"	400	1	224	231	231	57.8
SGRD4	PREP	SD2	14"	400	1	248	246	246	61.5
SGRD5	OFFICE	SD4	6"	100	1	52	55	55	55.0
SGRD6	PREP	SD2	14"	300	1	0	0	0	0.0
SGRD7	PREP	SD2	14"	400	1	235	248	248	62.0
SGRD8	PREP	SD2	14"	400	1	238	226	226	56.5

Completed By: Taylor Long on

Asset	Area Served	Notes

National TAB

Project: FREDDY'S - 135TH STREET OP, KS (FULL BALANCE)
[OPEN STORE]

System/Unit: FAN - Supply

Asset: MAU1 AREA: HOODS

Unit Data		
	Design	**Actual**
MFG	ACCUREX	ACCUREX
Model Num	XDGK-109-H15-01	XDGK-109-H15-01
Serial Num	-	12104153
Type	MAU	MAU
Configuration	VERTICAL DISCHARGE	VERTICAL DISCHARGE

Motor Data		
	Design	**Actual**
Motor MFG	-	WEG
Frame	-	NL
Horsepower	1.5	1.5
Motor Rpm	1725	1735
Phase	3	3
Voltage (rated)	208	208
Amperage (rated)	-	5.10-4.60
Service Factor	-	1.15

Drive Data		
	Design	**Actual**
Motor Sheave Size	-	3.875
Motor Bore Size	-	0.625
Fan Sheave Size	-	4.5
Fan Sheave Bore	-	0.75
Belt CL Distance	-	21.25
Num of Belts	-	1
Belt Size	-	A52
Belt Alignment Verified	-	GOOD

Gas Heat		
	Design	**Actual**
Heater Operates (y/n)	-	YES
Flame Status (pass/fail)	-	PASS
Inlet Air Temp SetPt	55	50
Discharge Air Temp SetPt	60	60
Air Flow Switch SP Actual	-	.22

Test Data		
	Design	**Actual**
CFM	2340	1845
SF RPM	1359	1412
Motor RPM	-	1760
RL Voltage	-	200/201/200
RL Amperage	-	2.3/2.0/2.0
Total ESP	1.177"	[2]
Fan Discharge SP	-	[2]

General		
	Design	**Actual**
Fan Rotation Correct	-	YES

Completed By: Gus Rutten on 05/09/2018

Notes: [1] NOT ABLE TO GET TOTAL ESP DUE TO THE STORE BEING OPEN
15.5X20
initial cfm 1665

National TAB

Project: FREDDY'S - 135TH STREET OP, KS (FULL BALANCE)
[OPEN STORE]

System/Unit: FAN - Exhaust

Asset: EF1 AREA: RESTROOM

Unit Data		
	Design	**Actual**
MFG	COOK	COOK
Model Num	GC-164	GC-164
Serial Num	-	[1]
Type	CENTRIFUGAL	CENTRIFUGAL
Configuration	CEILILNG	CEILING

Motor Data		
	Design	**Actual**
Motor MFG	-	BROAN
Frame	-	NL
Horsepower	136W	[1]
Motor Rpm	-	833
Phase	1	1
Voltage (rated)	120	[1]
Amperage (rated)	-	0.86
Service Factor	-	[1]

Test Data		
	Design	**Actual**
CFM	150	165
Fan RPM	1300	DD
Fan Rotation	-	CCW
Motor RPM	-	DD
System SetPt	-	MIDDLE
RL Voltage	-	118
RL Amperage	-	0.40
Total ESP	0.25"	[2]
Fan Inlet SP	-	[2]
Fan Discharge SP	-	ATM

Completed By: Gus Rutten on 05/09/2018

Notes: [1] NOT ABLE TO SEE UNIT LABEL DUE TO LOCATION
[2] NOT ABLE TO GET TOTAL ESP

National TAB

Project: FREDDY'S - 135TH STREET OP, KS (FULL BALANCE)
[OPEN STORE]

System/Unit: FAN - Exhaust

Asset: EF2 AREA: RESTROOM

Unit Data		
	Design	**Actual**
MFG	COOK	COOK
Model Num	GC-164	GC-164
Serial Num	-	[1]
Type	CENTRIFUGAL	CENTRIFUGAL
Configuration	CEILILNG	CEILING

Motor Data		
	Design	**Actual**
Motor MFG	-	BROAN
Frame	-	NL
Horsepower	136W	[1]
Motor Rpm	-	833
Phase	1	1
Voltage (rated)	120	[1]
Amperage (rated)	-	0.86
Service Factor	-	NL

Test Data		
	Design	**Actual**
CFM	150	164
Fan RPM	1300	DD
Fan Rotation	-	CCW
Motor RPM	-	DD
System SetPt	-	MIDDLE
RL Voltage	-	118
RL Amperage	-	0.46
Total ESP	0.25"	[2]
Fan Inlet SP	-	[2]
Fan Discharge SP	-	ATM

Completed By: Gus Rutten on 05/09/2018

Notes: [1] NOT ABLE TO SEE UNIT LABEL DUE TO LOCATION
[2] NOT ABLE TO GET TOTAL ESP

National TAB

Project: FREDDY'S - 135TH STREET OP, KS (FULL BALANCE)
[OPEN STORE]

System/Unit: FAN - Exhaust

Asset: KEF1 AREA: HOOD 1

Unit Data		
	Design	**Actual**
MFG	ACCUREX	ACCUREX
Model Num	XRUB-121-4	XRUB-121-4
Serial Num	-	12104151
Type	CENTRIFUGAL	CENTRIFULGAL
Configuration	UPBLAST	UPBLAST

Motor Data		
	Design	**Actual**
Motor MFG	-	CENTURY
Frame	-	48
Horsepower	0.25	0.33
Motor Rpm	-	1725
Phase	1	1
Voltage (rated)	115	115
Amperage (rated)	-	5.9
Service Factor	-	1.35

Drive Data		
	Design	**Actual**
Motor Sheave Size	-	3.5
Motor Bore Size	-	0.5
Motor Sheave SetPt	-	MAXIMIZED
Fan Sheave Size	-	4
Fan Sheave Bore	-	0.75
Belt CL Distance	-	4.75
Num of Belts	-	1
Belt Size	-	AX23

Test Data		
	Design	**Actual**
CFM	1083	923
Fan RPM	1290	1376
Fan Rotation	-	CW
Motor RPM	-	1740
RL Voltage	-	118
RL Amperage	-	3.6
Suction ESP	-	-0.56
Discharge ESP	-	ATM
Total ESP	0.67"	0.56
Brake Horse Power	-	0.20

Completed By: Gus Rutten on 05/09/2018

Notes: [1]MOTOR PULLEY MAXIMIZED

National TAB

Project: FREDDY'S - 135TH STREET OP, KS (FULL BALANCE)
[OPEN STORE]

System/Unit: FAN - Exhaust

Asset: KEF2 AREA: HOOD 2

Unit Data		
	Design	**Actual**
MFG	ACCUREX	ACCRUEX
Model Num	XRUB-141-7	XRUB-141-7
Serial Num	-	12104152
Type	CENTRIFUGAL	CENTRIFUGAL
Configuration	UPBLAST	UPBLAST

Motor Data		
	Design	**Actual**
Motor MFG	-	MARATHON
Frame	-	56
Horsepower	0.75	0.75
Motor Rpm	-	1725
Phase	3	3
Voltage (rated)	208	115
Amperage (rated)	-	10.0
Service Factor	-	1.15

Drive Data		
	Design	**Actual**
Motor Sheave Size	-	3.25
Motor Bore Size	-	0.625
Motor Sheave SetPt	-	3 TURNS OPEN
Fan Sheave Size	-	3.5
Fan Sheave Bore	-	0.875
Belt CL Distance	-	5.5
Num of Belts	-	1
Belt Size	-	A23

Test Data		
	Design	**Actual**
CFM	2200	2403
Fan RPM	1417	1400
Fan Rotation	-	CW
Motor RPM	-	1740
RL Voltage	-	118
RL Amperage	-	7.1
Suction ESP	-	-0.34
Discharge ESP	-	ATM
Total ESP	0.54"	0.34
Brake Horse Power	-	0.53

Completed By: Gus Rutten on 05/09/2018

Notes:

National TAB

Project: FREDDY'S - 135TH STREET OP, KS (FULL BALANCE)
[OPEN STORE]

System/Unit: Kitchen Hood Type I

Asset: PSP1 AREA: HOOD 2

Unit Data		
	Design	**Actual**
MFG	NA	NA
Model Num	NA	NA
Supply Plenum Type	PSP	
Supply Plenum Width	14	12
Supply Plenum Length	72	68

Test Data Supply		
	Design	**Actual**
AK factor	1	1
Total AK Area	7	5.667
Kv factor (Vel)	0.90	0.90
Num of Readings	-	6
Reading1 FPM	-	86
Reading2 FPM	-	132
Reading3 FPM	-	90
Reading4 FPM	-	130
Reading5 FPM	-	129
Reading6 FPM	-	116
Ave FPM(corr)	-	101
CFM	780	561

Completed By: Greg O'Day on 06/04/2018

Notes:

National TAB

Project: FREDDY'S - 135TH STREET OP, KS (FULL BALANCE)
[OPEN STORE]

System/Unit: Kitchen Hood Type I

Asset: HD1 AREA: HOOD 1

Unit Data		
	Design	**Actual**
MFG	ACCUREX	ACCUREX
Model Num	XBEW-4.33-S	XBEW-4.33-S
Job / Serial Num	-	[1]
Type	TYPE I CANOPY	TYPE I CANOPY
Hood length	52	52
Hood Width	51	51
Supply Plenum Type	PSP	PSP
Supply Plenum Width	24	24
Supply Plenum Length	52	52

Test Data Exhaust		
	Design	**Actual**
Filter Type	BAFFLE	BAFFLE
Filter Size 1	20X16	20X16
Filter Qty 1	3	3
Filter AK factor size 1	1.96	1.96
Filter Total AK Area	5.88	5.88
Filter1 FPM	-	155
Filter2 FPM	-	143
Filter3 FPM	-	173
Filter Ave FPM(corr)	-	308
CFM	1083	923

Cooking Equipment		
	Design	**Actual**
Item 1	-	FRYER

Test Data Supply		
	Design	**Actual**
AK factor	1	
Total AK Area	8.67	
CFM	780	484

Performance Data		
	Design	**Actual**
Exh-Supply Net CFM	303	439
Smoke Generation Type	-	[1]
Cooking Equip Heat On	-	YES
Hood Capture %	-	100
End Panels Installed (Y/N)	-	NO

General		
	Design	**Actual**
Tech Witness	-	AUGUST RUTTEN
Tech Company	-	NATIONAL TAB

Completed By: Gus Rutten on 05/09/2018

Notes: UNABLE TO INCREASE CFM WITHOUT PULLEY CHANGE
[1] LABEL IS WORN OFF
[2] NOT ABLE TO DO THE SMOKE TEST DUE TO THE STORE BEING OPEN
[3] NOT ABLE TO TAKE TEMPERATURE AT THE HOOD

National TAB

Project: FREDDY'S - 135TH STREET OP, KS (FULL BALANCE)
[OPEN STORE]

System/Unit: Kitchen Hood Type I

Asset: HD2 AREA: HOOD 2

Unit Data		
	Design	**Actual**
MFG	ACCUREX	ACCUREX
Model Num	XBEV-6.83-S	XBEV-6.83-S
Job / Serial Num	-	[1]
Type	TYPE I CANOPY	TYPE I CANOPY
Hood length	82	82
Hood Width	72	72
Supply Plenum Type	PSP	PSP
Supply Plenum Width	12	12
Supply Plenum Length	68	68

Test Data Exhaust		
	Design	**Actual**
Filter Type	BAFFLE	BAFFLE
Filter Size 1	20X16	20X16
Filter Qty 1	10	10
Filter AK factor size 1	1.96	1.96
Filter Total AK Area	19.60	19.60
Filter1 FPM	-	119
Filter2 FPM	-	128
Filter3 FPM	-	127
Filter4 FPM	-	125
Filter5 FPM	-	128
Filter6 FPM	-	128
Filter7 FPM	-	120
Filter8 FPM	-	114
Filter9 FPM	-	118
Filter10 FPM	-	119
Filter Ave FPM(corr)	-	240
CFM	2200	2403

Cooking Equipment		
	Design	**Actual**
Item 1	-	GRILL
Item 2	-	GRILL

Test Data Supply		
	Design	**Actual**
AK factor	1	1
Total AK Area	7	5.667
Kv factor (Vel)	0.90	0.87
Num of Readings	-	6
Reading1 FPM	-	220
Reading2 FPM	-	246
Reading3 FPM	-	219
Reading4 FPM	-	66
Reading5 FPM	-	123
Reading6 FPM	-	99
Ave FPM(corr)	-	145
CFM	780	799

Performance Data		
	Design	**Actual**
Exh-Supply Net CFM	1420	1604
Smoke Generation Type	-	[2]
Cooking Equip Heat On	-	YES
Hood Capture %	-	100
End Panels Installed (Y/N)	-	NO

General		
	Design	**Actual**
Tech Witness	-	AUGUST RUTTEN
Tech Company	-	NATIONAL TAB

Completed By: Gus Rutten on 05/09/2018

Notes: PHYSICALLY UNABLE TO DROP PSP
[1] LABEL IS WORN OFF
[2] NOT ABLE TO DO THE SMOKE TEST DUE TO THE STORE BEING OPEN
[3] NOT ABLE TO TAKE TEMPERATURE AT THE HOOD